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ABSTRACT

Project PRIMES (Progress Research in Meeting Elementary Standards) is a Title III ESEA funded project charged with assisting Columbus (Ohio) public and parochial elementary schools in an on-sight evaluation of science programs. The population included nine schools in Columbus. Input was received from 9 principals, over 90 teachers and 140 parents. The method used to evaluate was an opinionnaire created by principals and teachers from public and parochial schools in Columbus. The instrument was made up of six sections: equipment and materials, classroom programs, teacher strengths and weaknesses, staff strengths and weaknesses, organization and overall evaluation of the science program. The results of the study indicate that a majority of the staff felt the science program is weak. There is a lack of equipment with the textbook-lecture approach used most often and few child-oriented activities. In addition, community resource personnel were not utilized. The major recommendations involved adopting programs that are activity oriented, making better use of resource teachers and improving communication in the area of materials and supplies. Finally on a state level, it is recommended that standards place too much emphasis on material objects per se and too little on the staff's knowledge of the use of these materials. (Author/BR)

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COLUMBUS PUBLIC SCHOOLS

DEPARTMENT OF EVALUATION, RESEARCH AND PLANNING
DIVISION OF SPECIAL SERVICES
COLUMBUS, OHIO

SE 017 063

A Report on

Elementary School Curriculum
Science Component
Project PRIMES:
Progress Research in Meeting Elementary Standards
ESEA, Title III
1972-1973

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Section I

Specifications of the Project

A. Statement of Purpose

Project PRIMES is a Title III ESEA funded project charged with assisting Columbus (Ohio) public and parochial elementary schools in an on-sight evaluation of mandated areas. These mandated areas are prescribed in the Minimum Standards for Ohio Elementary Schools, 1970.

Project PRIMES is designed to increase the knowledge of evaluation background and techniques at the local building level over a three year period.

This will be accomplished by using a Field Service Unit made up of Project PRIMES personnel who will work directly with staff members. This unit will use evaluation instruments designed especially for the various mandated areas. At the project's termination date, the local staff will be skilled in the evaluation process and will be able to carry out self-evaluations.

B. Procedures

1. Target Audience

The target audience for Project PRIMES is the principal, teachers, and parents (with students optional) at the local building level. The primary unit in which these personnel work is titled the Building Evaluation Committee. This local building committee is made up of the principal, at least two teachers, and two parents. These people in turn work with the other teachers and parents of the educational community.

2. Services Provided

The Project PRIMES staff members worked directly with all principals in the Columbus elementary schools during the 1972-73 school year. Each principal then decided the amount of direct services to receive from Project PRIMES. These direct services are available at the building level in three approach forms. They are:

Approach I

a. A PRIMES staff member briefs the principal on the various aspects of the project.
b. A PRIMES staff member briefs the Building Evaluation Committee and reviews the evaluation instrument with them.
c. A PRIMES staff member briefs the entire staff.
d. A work session(s) is completed using the evaluation instrument.

e. A consensus of the instrument is completed.

f. The Building Evaluation Committee meets to form one final consensus statement representative of the entire educational community.

Approach II

a. b. c. Same as Approach I. (The Building Evaluation Committee leads the entire staff and parents through the work and consensus session).

d. A PRIMES member returns to work with the Building Evaluation Committee to form a final consensus.

Approach III

a. Same as Approach I
(The principal and Building Evaluation Committee lead the teachers and parents through the evaluation process.)

During the 1972-73 school year, nine Columbus Elementary schools chose to evaluate their science program. These schools and their choice of approach selections were:

TABLE I

APPROACH SELECTIONS

School	Approach I	Approach II	Approach III
Arlington Park	X		
Binns	X		
Cassady		X	
Fair Ave.		X	
Franklinton			X
Glenmont			X
Homedale	X		
Valley Forge		X	
Scioto Trail		X	
Total	3	4	2

From these nine schools, input was received from the 9 principals, over 90 teachers and one hundred and forty (140) parents. Both principals and teachers used the developed instrument while parents used selected sections of that instrument or a separate opinionnaire.

C. Instrumentation

The instrument was devised by a committee made up of principals and teachers from the public and parochial schools in Columbus. The instrument is made up of six sections. These are:

Equipment and Materials
Classroom Programs
Teacher Strengths and Weaknesses
Staff Strengths and Weaknesses
Organization
Evaluation Overall Program

The responses varied from a simple "Yes - No" response to a three and five point rating scale.

While the instrument was a good starting point for self-evaluation, it was limiting in many aspects and at times forced the respondents to choose a "middle of the road" response. Because it was a teacher-oriented instrument, it was quite difficult for most parents to respond to it.

Section III

Results

A. Equipment and Materials

TABLE II

EQUIPMENT AVAILABLE IN THE SCHOOLS

Item	Number of Schools Responding	
	Yes	No
Science tables	8	1
Small group areas for science	3	6
Science bulletin boards	7	2
Science showcase	2	7
Darkening shades	6	3
Equipment for testing and experimenting	0	9

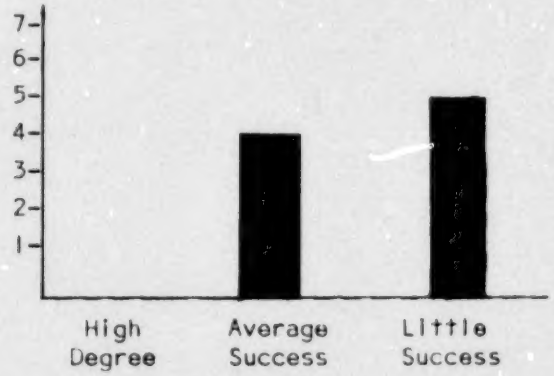
As far as science hardware goes, it appears that most schools lack the equipment necessary for science experimenting. Most schools do have the necessary storage area for the science supplies,

B. Classroom Program

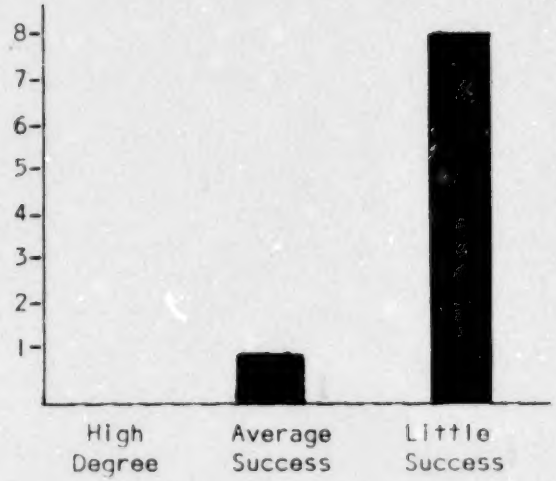
Much of this section had responses that were middle of the road choices; e.g. "Average Success". There were two questions with responses that leaned toward the negative.

TABLE III

ITEM: TAKES ADVANTAGE OF AVAILABLE COMMUNITY RESOURCES AND RESOURCE PEOPLE



ITEM: INTEGRATES AND CORRELATES SCIENCE INTO OTHER DISCIPLINES



These two questions involving resources used and integrating sscience with other curriculum areas are the only responses showing a variation from the norm. There were no responses marked to a "High Degree" in this section.

C. Teacher Strengths and Weaknesses

Training

1. All teachers have had training in:
   - Science method courses.
   - Minimum requirements for graduation in education.
2. Some (20-50% of staff) teachers have training in:
   - Additional college courses.
   - Inservice science training.
3. Few (one or two teachers per staff) teachers have had training in:
   - Graduate science courses.

Teaching Experience

1. All staff members have had experience in teaching science by:
   - textbooks, lectures.
2. Most teachers (50%+) have had experience in teaching science by:
   - textbook, lecture, and demonstration.
3. Some (20%) have had experience in teaching science by:
   - Wide use of materials with small groups and individual involvement.
4. Very few (one or less per staff) have had experience in teaching science by:
   - individualization.
5. No teachers have had experience in teaching science by:
   - Departmentalization.
   - Team teaching.

The present science program would certainly encourage the textbook lecture type of teaching. Coupled with the lack of materials (see Table I) and the amount of science education course work the average teacher has, it is well dictated what methods will be used to teach science.

This apparent fact that most teachers use the textbook lecture approach runs contrary to the findings and suggested means of teaching science at the elementary level as prescribed by National Science Foundation (see Readings in Science Education for Elementary School, Victor and Lerner, Macmillan Co.)

D. Staff Strengths and Weaknesses

TABLE IV

Items	Number of Responses	
	Yes	No
1. Does the staff have a full time science teacher?	0	9
2. Does the school have a science supervisor?	2	7
3. Staff utilize T.V. for science?	8	1
4. Are resource teachers available?	8	1
5. Are university personnel used?	0	9

Question #4 is particularly interesting. Eight of the schools said that resource teachers were available. When asked how often these personnel were used on a per weekly basis, those same schools responded that they were seldom used. (During the 1972-73 school year, one science resource teacher was on call to these schools.)

E. Organization

A discrepancy appears with item #5. A majority of the schools respond that individual instruction through experimenting takes place, but yet Table I shows a lack of necessary supplies; "Teacher Strengths" indicates few use individualization as a teaching method; and items #4 and 6 contradict item #5.

Item #8 substantiates the "Classroom Program" (see Table III) response showing staffs not utilizing the local community personnel as a resource.

F. Overall Program*

In the overall rating of the science program, the majority of responses (fifteen questions) were "average". Four of the responses are listed negatively as "weak".

---

*One school, Fair Avenue, did not respond to this section of the instrument.

TABLE V

Item	Number of Responses	
	Yes	No
1. The school system has a stated and organized science program.	5	5
2. The school has a continuous developmental science program.	1	7
3. Each child's science abilities are evaluated.	0	9
4. A child can develop his own interests in science.	2	7
5. Group and individual instruction are provided through experimentation, investigation and individual instruction.	7	2
6. Each child may construct simple equipment and science kits.	3	6
7. Field trips are used.	7	2
8. Community resource personnel are used.	3	6

TABLE VI

NEGATIVE RESPONSE TO THE RATING
OF THE OVERALL SCIENCE PROGRAM

1) ITEM: SYSTEM WIDE PROGRAM

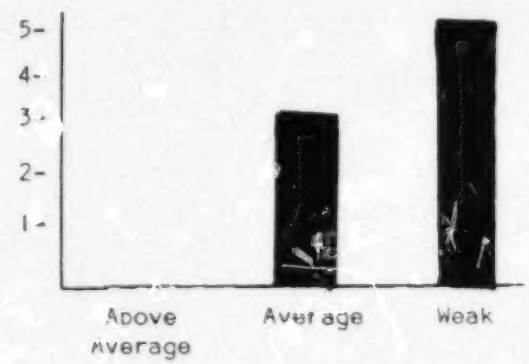
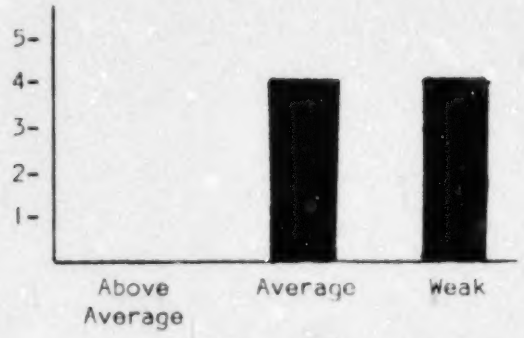
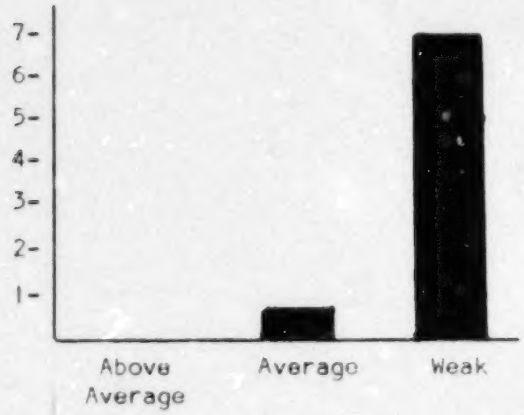


TABLE VI (Continued)

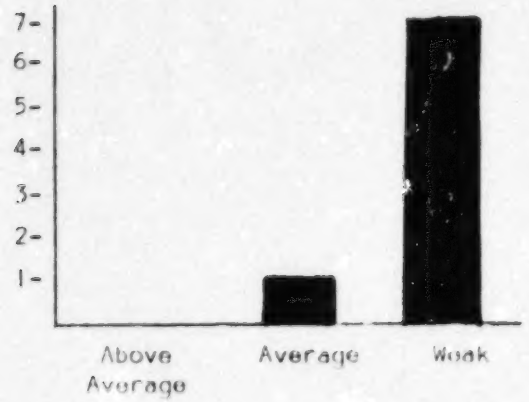
2) ITEM: INDIVIDUAL SCHOOL PROGRAM



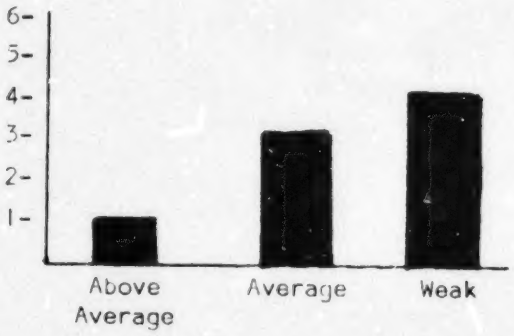
3) ITEM: AMOUNT OF WORK SPACE



4) ITEM: FACILITIES FOR INDEPENDENT WORK



5) ITEM: USE OF OUTSIDE RESOURCE PEOPLE



These negative responses again make statements in regards to the use of individualization and local community resource personnel.

More than one-half of the staffs feel that the system wide program is weak (ITEM 1) and one-half also feel their own school's program is weak (ITEM 2).

Section III

Summary and Recommendations

A. Summary

1. Conclusions

a. The majority of staff members feel the science program is weak.

b. There is a lack of equipment in which the child can partake in the scientific process.

c. The teaching of science is limited to mostly textbook lecture approach with some demonstration included. Very little child orient activities are used.

d. Community resource personnel are not used.

2. Perceptions

a. There is a feeling in most schools that if more equipment were obtained a better science program would result. This is not necessarily true for much equipment goes unused. If a staff were to take an inventory of all science equipment in the school and then list and show examples of the various uses for each piece of science equipment, the staff would become much more knowledgeable in the use of the available equipment.

b. Science education in most schools is the subject that gets put off until last. This is due to (1) lack of teacher

background in science education, (2) the current text is generally disliked and considered too difficult for the grade level assigned.

c. While science can be readily adapted to other curriculum areas and can be used with high motivational activities,, it seldom is.

B. Recommendations

1. Building Level

a. Students need to be more involved in the processes of science. The present program of textbook-lecture approach does not allow for the child to become part of the processes vital to the learning of science education.

b. Supplies that are available often times go unused. Staff development is needed to give staff members ideas on how to use the materials on hand.

c. Supplies are needed that allow for student participation.

d. Staff development is needed in science education to allow the teacher alternatives to the textbook-lecture approach.

e. Local resource personnel and places should be incorporated into the science program at the local building level.

f. Goals and objectives should be developed to meet the local level needs in science education.

2. System Level

a. The present program should be revised in favor of a more student activity oriented program such as the SAPA, SCIS, and/or ESS programs. If this is not possible, then a more activity oriented text is needed; e.g. Harcourt, Brace, and Jovanovich.

b. The system needs to provide more help by means of resource science teachers.

c. Communication, especially in the areas of supplies and materials, needs to be improved.

3. Project Level

a. A science evaluation instrument needs to be developed that will present a wider spectrum of choices to those participating in the evaluation process.

b. The project needs to provide assistance, even if in a coordinating capacity, to schools finishing their evaluation and beginning material steps of program improvement.

4. State Level

a. The gap between the Level I and Level II standards for requirements in staffing is ridiculous and needs to be changed. Level I is apparently too little of a requirement while Level II becomes unattainable by the average school throughout the state. A more satisfactory midpoint is needed.

b. Too much emphasis within the state standards is placed on material objects per se and too little on the staff's knowledge of the use of these materials. This should be amended.